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SOME IMPORTANT TASKS IN INTRODUCING NEW TECHNIQUES  
IN THE COMMUNICATIONS FIELDS

Technical Sciences Communications  
Herald], No 10, October 1955.  
Moscow, Pages 3-4

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In its Resolution on the Report of N. A. Bulganin the July Plenum of the TsK KPSS [Central Committee of the Communist Party of the Soviet Union] defined the tasks for a further increase in industry, for technical progress, and for improved organization of labor.

Communications play an important role in the organization of any production processes, in the management of all branches of the national economy, in the administration of the state. V. I. Lenin's words emphasizing the importance of communications are well known: "Socialism without postal service, the telegraph, or machines is the emptiest of phrases." All communications workers must keep in mind that successful fulfillment of the tasks presented by the July Plenum of TsK KPSS depends largely on the clarity, continuity, and completeness of the service rendered by the communications facilities of industry and all other branches of the national economy as well as of the population.

With each year communications facilities in the Soviet Union increase in volume and their techniques are improved. Many scientific research institutes and laboratories are occupied with problems of technical development of communications facilities. The achievements of Soviet scientists and engineers in the fields of radio engineering, electronics, automatic control, and television are well known. However, it must be admitted that the development of communications facilities in our country lags considerably behind the overall development of production both in a quantitative sense and with respect to its technical level.

The decisions of the July Plenum of the TsK KPSS oblige the radio engineering industry and the Ministry of Communications USSR to achieve a marked improvement in the state of communications facilities. We will dwell briefly on a few of the important tasks arising from the decisions of the Plenum.

Telegraph communication is one of the most important branches of communications. During the postwar period in the USSR much work was performed in the technical expansion of telegraphy. Thus, the number of start-stop teletypewriters during this time was more than trebled, a substantial network of channels of voice-frequency carrier telegraphy was created, the productivity of labor of telegraph operators was increased, and the qualitative indexes were improved. However, about 60 percent of the telegraph equipment consists of outmoded, relatively inefficient Baudot and Morse equipment.

The decisions of the Plenum require the most rapid replacement of such equipment. Meanwhile the radio engineering industry is devoting entirely too little attention to the production of telegraph equipment. The principal type of start-stop teletypewriter, the ST-35, has long been outmoded. In addition, this equipment is often produced

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with basic components of low-quality (the spindle, guide ratchet, trip-off pawl). Production of the new, more efficient RT-50 apparatus of the roll type has not as yet been mastered. Moreover, in its qualitative indexes it has already fallen behind the achievements of world engineering in this field.

Along with the introduction of new equipment produced by industry, communications workers are obligated to constantly improve existing equipment and to improve the organization of production processes. In particular, with the vast numbers of telegrams which pass daily through the largest centers, automatic processing of telegrams assumes especially great importance. A few achievements may be noted in the automatization of the transceiving of through telegrams at the telegraph centers of Moscow, Leningrad, Minsk, Kiev, and a number of other cities where in 1954 approximately 9 percent of the traffic was processed by automatic methods. However, the work performed is completely inadequate.

We are making very slow progress in developing improved equipment for the automatization of transceiving with code switching.

It is also necessary to point out the extreme delay in introducing a subscriber telegraph system, which system has great prospects for improving the management of production. In order to provide intra-oblast communications between large industrial and agricultural areas we must quickly develop a small subscriber telegraph exchange with a capacity of 10-20 lines and provision for automatic connection to a subscriber telegraph net.

The effectiveness and stability of telegraph communications depends largely on the stability of the voice-frequency carrier telegraph channels. Yet, it must be pointed out that only 14 percent of the channels of Soviet voice-frequency carrier telegraphy is provided with frequency modulation. Most of this network is equipped with the outmoded VT-34 apparatus with amplitude modulation. It is necessary to speed the modernization of the latter equipment under operating conditions, converting it to frequency modulation. Along with this it is necessary to organize the development of a new, improved system of voice-frequency carrier telegraphy designed for high-speed operation.

It has long been known that the most perfect types of documentary communication is phototelegraphy, which eliminates the possibility of error in the transmission of a text and in principle permits more thorough automatization of the entire process of telegraph communication. However, up to the present entirely too little attention has been given to this important matter and since 1941 the production of phototelegraphic equipment has ceased altogether.

The decisions of the July Plenum of the TsK KPSS provide for the large-series production of phototelegraphic equipment. After careful study of a number of developments in phototelegraphic equipment the Technical Council of the Ministry of Communications USSR has made recommendations concerning various types of this equipment which may be quickly mastered in production.

The telephone is of utmost importance for the national economy, organs of administration, and for the personal needs of the population. Our greatest lag is in this field, one of the causes being the inadequate production of telephone equipment. Only half of the productive power of the principal telephone plant is utilized for the production of this equipment. Consequently, the extremely slow increase in the production of telephone equipment is the result of incorrect planning, and

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the telephone communications workers do not display sufficient persistence in correcting the resulting state of affairs.

In addition to this, the telephone equipment which is being produced is not at the required technical level. After the war the ATS-47 St. Petersburg type system, having a number of advantages over the old machine system of ATS [Automatic Telephone exchange], was developed rapidly enough. However, the ATS-47 also is not free of technical shortcomings. Thus, the moving parts of the finders wear out too quickly, which makes the operational servicing of large exchanges extremely difficult. The effective range of subscriber and junction lines is inadequate, and this severely limits the development of the telephone networks. No provision was made in the ATS-47 for the possible application of the rapid system of intercity telephone communications with automatic connection. Note must also be made of the high noise level. This exchange has a number of other shortcomings.

However, the work of improving it (especially in increasing the operational reliability of the finders) was begun at LONIIS [Leningrad Oblast Scientific Research Communications Institute] and at the plant in 1951 and at the present time is quite incomplete. It is necessary to hasten the solution of this problem, devoting special attention to the creation of instruments for automatic testing of the finders so that the number of servicing personnel may be sharply reduced. It is necessary to call the attention of persons directly engaged in this work and the corresponding directors to the importance of immediate conclusion of these projects, and to the importance of the rapid operational testing of the improved equipment and its introduction into mass production.

Along with the modernization of the ATS-47 research operations must be intensified for the creation of a new ATS system making wide use of electronics and new, miniature components of high-grade materials. This ATS system with higher qualitative indexes must have small dimensions and be considerably cheaper both in production and in servicing, which is very important in insuring the widest installation of telephone facilities in the Soviet Union.

It is known that the element which most limits the development of telephone networks is the system of junction and subscriber lines. Up to the present the city networks have been expanded only by laying new, expensive quadred telephone cables. It is time that more intensive effort was made to introduce modern high-frequency carrier methods on the lines of the city telephone network. TsNIIS [Central Scientific Research Institute of Communications] and Central Design Bureau of the Ministry of Communications USSR are on the right path for the solution of this problem, but it is necessary to press for the completion of these most important projects in the field of modern communications techniques. The laboratory of the MRTP [Ministry of Radio Engineering Industry] must engage in these operations at once.

The improvement of telephone communications in the Soviet Union may also be furthered by speeding the production of small ATS's of a different type in order to organize sub-exchanges and to install telephone facilities in rural areas.

The decisions of the July Plenum of the TsK KPSS specified that production of communications equipment for mass use be changed over to continuous-flow lines. There is no doubt that this decision relates to telephone equipment as a whole and should create the basis for the most rapid elimination of the lag in installing telephone facilities.

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The workers of industry and the Ministry of Communications USSR are confronted with great tasks in the field of intercity communications. Here it is necessary to extend the cable facilities of the principal communications lines, to provide them with the newest carrier telephone equipment, to make wider use of semiautomatic and develop automatic methods of intercity communications, as well as a number of other measures. There is an extremely wide circle of technical problems in this field. We will here touch on one of them, radio-relay communications lines. Radio-relay lines play an extremely important part in world practice in forming networks of multi-channel communications lines and, in particular, for long-distance transmission of television programs. Yet, despite the explicit directive of the Nineteenth Congress of the KPSS on expanding operations for the introduction of radio-relay communications in the Soviet Union, we continue to lag far behind in this important work. The Scientific Research Institute of the Ministry of Communications USSR has created a radio-relay communications system and is developing another, more improved system. However, industry has not yet become involved in this work and, consequently, there can be no talk of wide application of such equipment. It is necessary that this be done so that industry can seriously set about fulfilling the directive of the nineteenth party congress as emphasized in the instruction of the July Plenum of the TsK KPSS on the organization of large-series production of radio-relay stations. Moreover, it is in any event impossible to base production on old developments alone. Constant improvement of the equipment produced is necessary in order not to lag behind the achievements of world engineering.

Along with this the Ministry of Communications USSR must and can perform considerable work in introducing radio-relay communications by putting its productive potentialities to use.

Great problems exist in the field of radio broadcasting and television. The Soviet Union has always played a leading role in the development of broadcasting facilities and has at its disposal the largest network of radio broadcasting stations. However, the quality of radio reception and the quality of the sound in Soviet radio transmission in many cases is unsatisfactory. Here two principal causes are responsible. First, we have devoted entirely too little attention to the audio tract in radio broadcasting, with the result that the expensive high-power radio stations do not provide high-quality sound upon reception. Moscow is one of the largest radio broadcasting centers in the world. The entire world listens to the voice of Moscow. Thus voice must be powerful and sound well. Apparently the workers of radio broadcasting forget that the quality of sound in radio transmission depends above all on the elements of the audio tract: the studio, microphones, amplifiers, recording equipment, connecting lines, and loudspeakers. There has arisen the need for the construction of a radio building in Moscow, a building outfitted with consideration of the achievements of Soviet and foreign engineering.

The Ministries of Communications, Culture, and Radio Engineering Industry must immediately adopt measures to improve the condition of the audio tracts both at the center and at broadcast sites.

There is still another cause of unsatisfactory reception of our radio broadcasting stations: the radio-frequency interference of foreign radio stations as well as various industrial interferences.

In order to provide high-quality broadcasting protected against all interference modern techniques suggest the use of ultra-high frequencies with frequency modulation. The directives of the Nineteenth

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Congress of the Communist Party of the Soviet Union called for the beginning of a wide development of uhf broadcasting in our country. However, as yet only the first steps in this direction have been taken — only a few transmitters have been produced and installed. Moreover, due to the inadequate requirements on industry in the production of these transmitters, they are too bulky and require constant servicing; hence they cannot be adopted as basis for large-series production of the uhf stations called for in the decisions of the July Plenum of the TsK KPSS. The development of an unattended uhf transmitter utilizing the most recent engineering achievements must be achieved immediately. In addition, special attention must be devoted to the completion of a system of high-quality feeding of programs to uhf radio stations and uhf broadcasting with high-quality audio equipment must be provided. Moreover, it is once again necessary to point out that uhf transmission cannot yet be received. Radio receivers for the uhf range must be produced as well as inexpensive uhf attachments for existing receivers.

The decisions of the Plenum devoted special attention to wide introduction of automatization of the most diverse production processes, which will permit a considerable increase in the productivity of labor. In creating any new communications equipment the problems of automatization must be solved more fully for the purpose of increasing the operational reliability of the equipment and achieving a marked decrease in maintenance personnel.

This does not apply merely to new types of equipment. It is also necessary to modernize equipment already in operation. Let us take, for example, radio transmitters. Their maintenance requires a large staff of skilled personnel. During the work shift these specialists are very seldom burdened with productive work, for the connection, disconnection, and retuning of radio transmitters requires little time. Thus, the attendants, as a rule, are kept at the station just in case of a technical breakdown. Nevertheless, modern techniques and experience at a number of other installations no less complex than radio stations point to the possibility of complete remote control of a transmitter, its automatic connection, retuning, monitoring, disconnection, and the automatic performance of other operating processes.

It should be pointed out that the workers of a number of radio rebroadcast units (particularly of the Moscow municipal radio rebroadcast network) have proved to be much more progressive than the workers of radio transmitting stations. Nevertheless, there are many skilled specialists in the latter group and it is high time that they seriously applied themselves to the solution of this important problem.

Workers engaged in operation and those of the production laboratories must relentlessly deal with the problems of modernizing existing equipment and carry over to it the individual achievements of new techniques, and the workers of the Ministry of Communications and of the scientific research institutes must assist them in this matter in every possible way.

The July Plenum of the TsK KPSS calls for a new increase in the creative activity of engineering and technical workers. Communications workers have great possibilities for a valuable contribution in improving the technical communications facilities and increasing the productivity of labor.

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